AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act as amended, (33 U.S.C. §§1251 et seq.; the "CWA"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§26-53),

Middlesex School

is authorized to discharge from the facility located at

Middlesex School Wastewater Treatment Plant
1400 Lowell Road
Concord, MA 01742

to receiving water named

Spencer Brook
(Concord River Watershed - MA 82)

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on the date of signature if no comments are received during public notice. If comments are received during public notice, this permit will become effective 60 days after signature.

This permit and the authorization to discharge expire at midnight, five (5) years from the effective date.

This permit supersedes the permit issued on February 4, 1988 and modified on September 28, 1993.

This permit consists of 12 pages in Part I including effluent limitations, monitoring requirements, Attachment A, and 35 pages in Part II including General Conditions and Definitions.

Signed this 3rd day of March, 2005

/s/ SIGNATURE ON FILE

Linda M. Murphy, Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

Director
Division of Watershed Management
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

PART I

A.1. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge from outfall serial number 001**,** treated effluent to Spencer Brook. Such discharges shall be limited and monitored as specified below.

EFFLUENT CHARACTERISTIC	**EFFLUENT LIMITS**					**MONITORING REQUIREMENTS**	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE[3] TYPE**
Flow	*********	*********	0.052 MGD[2]	********	Report MGD	Continuous	Recorder
BOD_5 [4]	4.3 lbs/day	4.3 lbs/day	10 mg/l	10 mg/l	Report[1] mg/l	1/Week	24-Hour Composite[5]
TSS [4]	4.3 lbs/day	6.5 lbs/day	10 mg/l	15 mg/l	Report[1] mg/l	1/Week	24-Hour Composite[5]
pH Range[1]	6.5 - 8.3 SU See Permit Page 6, Paragraph I.A.1.b.					1/Day	Grab
Fecal Coliform[1,6]	**********	**********	200 cfu/100ml	*********	400 cfu/100 ml	1/Week	Grab
Total Residual Chlorine[13]	**********	**********	0.026 mg/l	**********	0.045 mg/l	5/Week[13]	Grab
Dissolved Oxygen (April 1st - October 31st)	**********	**********	Report mg/l	**********	**********	1/Week	Grab

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PARAMETER	AVERAGE MONTHLY	AVERAGE WEEKLY	AVERAGE MONTHLY	AVERAGE WEEKLY	MAXIMUM DAILY	MEASUREMENT FREQUENCY	SAMPLE[3] TYPE
Phosphorus, Total [11, 12] (April 1st - October 31st)	**********	**********	0.2 mg/l	**********	Report mg/l	2/Week	24-Hour Composite[5]
Phosphorus,Total (November 1st - March 31st)	**********	**********	1.0 mg/l	**********	Report mg/l	1/Week	24-Hour Composite[5]
Ortho Phosphorous (November 1st - March 31st)	**********	**********	Report mg/l	**********	Report mg/l	1/Week	24-Hour Composite[5]
Total Ammonia Nitrogen (May 1st- October 31st)	**********	**********	1.0 mg/l	********	1.5 mg/l	1/Week	24-Hour Composite[5]
Total Ammonia-Nitrogen (November 1st- April 30th)	**********	**********	Report mg/l	********	Report mg/l	1/Month	24-Hour Composite[5]
Total Copper	**********	**********	Report mg/l	**********	**********	1/Month	24-Hour Composite[5]
Whole Effluent Toxicity (See footnotes 7, 8, 9, & 10)	Acute $LC_{50} \geq 100\%$; Chronic $\geq 42\%$					4/Year	24-Hour Composite[5]

All sampling shall be representative of the effluent that is discharged through outfall 001 to Spencer Brook . A routine sampling program shall be developed in which samples are taken at the same location, same time and same days of every month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report that is submitted to EPA. In addition, all samples shall be analyzed using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.

Footnotes:

1. Required for State Certification.

2. For flow, report maximum and minimum daily rates and total flow for each operating date.

3. All required effluent samples shall be collected after the UV disinfection unit. Any change in sampling locations must be reviewed and approved in writing by EPA and MADEP. All samples shall be 24 hour composites unless specified as a grab sample in 40 CFR §136.

4. Sampling required for influent and effluent.

5. A 24-hour composite sample will consist of at least twenty four (24) grab samples taken during one consecutive twenty four hour (24 hr) day (e.g., 0700 Monday to 0700 Tuesday).

6. Fecal coliform monitoring shall be conducted year round. This is also a State certification requirement. Fecal coliform discharges shall not exceed a monthly geometric mean of 200 colony forming units (cfu) per 100 ml, nor shall the daily maximum exceed 400 cfu per 100 ml.

7. The permittee shall conduct acute and chronic toxicity tests four times per year. The permittee shall test the daphnid, Ceriodaphnia dubia, only. The chronic test may be used to calculate the acute LC_{50} at the 48 hour exposure interval. Toxicity test samples shall be collected during the second week of the months of March, June, September and December. The test results shall be submitted by the last day of the month following the completion of the test. The results are due April 30th, July 31st, October 31st and January 31st, respectively. The tests must be performed in accordance with test procedures and protocols specified in **Attachment A** of this permit.

Test Dates Second Week in	**Submit Results By:**	**Test Species**	**Acute Limit LC_{50}**[8]	**Chronic Limit C-NOEC**[9]
March June September December	April 30th July 31st October 31st January 31st	Ceriodaphnia dubia (Daphnid) See Attachment A	≥ 100%	≥ 42%

After submitting one year and a minimum of four consecutive sets of WET test results, all of which demonstrate compliance with the WET permit limits, the Permittee may request a reduction in the WET testing requirements. The permittee is required to continue testing at the frequency specified in the permit until notice is received by certified mail from the EPA that the WET testing requirement has been changed.

8. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall

cause no more than a 50% mortality rate.

9. Chronic NOEC is the highest effluent concentration at which No Observed Chronic Effect (e.g. growth, reproduction, mortality) will occur at continuous exposure to test organisms in a life-cycle or partial life-cycle test. The "42% or greater" limit is defined as a sample which is composed of 42% (or greater) effluent, the remainder being dilution water. This is a maximum daily limit based on the dilution ratio of 2.4 : 1.

10. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall follow procedures outlined in **Attachment A Section IV., DILUTION WATER** in order to obtain permission to use an alternate dilution water. In lieu of individual approvals for alternate dilution water required **in Attachment A**, EPA-New England has developed a Self-Implementing Alternative Dilution Water Guidance document (called "Guidance Document") which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. If this Guidance document is revoked, the permittee shall revert to obtaining approval as outlined in **Attachment A**. The "Guidance Document" has been sent to all permittees with their annual set of DMRs and Revised Updated Instructions for Completing EPA's Pre-Printed NPDES Discharge Monitoring Report (DMR) Form 3320-1 and is not intended as a direct attachment to this permit. Any modification or revocation to this "Guidance Document" will be transmitted to the permittee as part of the annual DMR instruction package. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in **Attachment A**.

11. The Permittee shall achieve the average monthly limit of 0.2 mg/l for total phosphorous beginning April 1, 2005 (See Section E, Compliance Schedule, page 10).

12. The 0.2 mg/l total phosphorus limit is a 60 day rolling average limit and will be effective on April 1, 2005 (for the seasonal requirement April 1st to October 31st) in accordance with the compliance schedule in Section E. The 60 day average value for each day in a given month, beginning on the 60th day after April 1, must be calculated and the highest 60 day average value for that month must be reported on the monthly discharge monitoring report (DMR). In addition, the maximum daily value must be reported for each month.

13. The effluent will be monitored for TRC five times per week (5/WEEK) for a period of six (6) months, and reported on monthly DMRs. As a condition of this permit, the TRC monitoring requirements may be reduced if certain conditions are met. **If after six months of monitoring, the data clearly establishes that the effluent TRC is non-detect**, the permittee may submit a written request to EPA seeking a review of TRC monitoring results. EPA will review the TRC data and pertinent information to make a determination if the monitoring frequency will be reduced or removed from the permit. The permittee is required to continue testing at the frequency specified in the permit until the permit is either formally modified or until the permittee receives a certified letter from the EPA indicating a change in the permit conditions.

In addition, after the cleaning solution is discharged to the aeration tank, TRC monitoring will occur in this tank and must be non-detect before the membrane tank and associated flow

train produce effluent. All TRC monitoring results from the aeration tank will be recorded and submitted as an attachment to monthly DMRs.

Part I.A.1.

a. The discharge shall not cause a violation of the water quality standards of the receiving waters.

b. The pH of the effluent shall not be less than 6.5 nor greater than 8.3 at any time.

c. The discharge shall not cause objectionable discoloration of the receiving waters.

d. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.

e. The permittee's treatment facility shall maintain a minimum of 85 percent removal of both total suspended solids and biochemical oxygen demand. The percent removal shall be based on monthly average values.

f. When the effluent discharged for a period of 90 consecutive days exceeds 80 percent of the designed flow, the permittee shall submit to the permitting authorities a projection of loadings up to the time when the design capacity of the treatment facility will be reached, and a program for maintaining satisfactory treatment levels consistent with approved water quality management plans.

g. The use of chlorine for disinfection is prohibited.

h. The results of sampling for any parameter above its required frequency must also be reported.

2. All wastewater treatment plants (WWTP) must provide adequate notice to the Director of the following:

a. Any new introduction of pollutants into that WWTP from an indirect discharger in a primary industry category discharging process water; and

b. Any substantial change in the volume or character of pollutants being introduced into that WWTP by a source introducing pollutants into the WWTP at the time of issuance of the permit.

c. For purposes of this paragraph, adequate notice shall include information on:

(1) the quantity and quality of effluent introduced into the WWTP; and

(2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the WWTP.

3. Toxics Control

   a. The permittee shall not discharge any pollutant or combination of pollutants in toxic amounts.

   b. Any toxic components of the effluent shall not result in any demonstrable harm to aquatic life or violate any state or federal water quality standard which has been or may be promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards.

4. Numerical Effluent Limitations for Toxicants

   EPA or DEP may use the results of the toxicity tests and chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to Section 304(a)(1) of the Clean Water Act (CWA), state water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including but not limited to those pollutants listed in Appendix D of 40 CFR Part 122.

B. UNAUTHORIZED DISCHARGES

The permittee is authorized to discharge only in accordance with the terms and conditions of this permit and only from the outfall listed in Part I A.1. of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs) are not authorized by this permit and shall be reported in accordance with Section D.1.e. (1) of the General Requirements of this permit (Twenty-four hour reporting).

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the sewer system shall be in compliance with the General Requirements of Part II and the following terms and conditions:

1. Maintenance Staff

   The permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit.

2. Preventative Maintenance Program

   The permittee shall maintain an ongoing preventative maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The program shall include an inspection program designed to identify all potential and actual unauthorized discharges.

3. Infiltration/Inflow Control Plan:

   The permittee shall develop and implement a plan to control infiltration and inflow (I/I) to

the separate sewer system. The plan shall be submitted to EPA and MA DEP **within six months of the effective date of this permit** (see page 1 of this permit for the effective date) and shall describe the permittee's program for preventing infiltration/inflow related effluent limit violations, and all unauthorized discharges of wastewater, including overflows and by-passes due to excessive infiltration/inflow.

The plan shall include:

- An ongoing program to identify and remove sources of infiltration and inflow. The program shall include the necessary funding level and the source(s) of funding.

- An inflow identification and control program that focuses on the disconnection and redirection of illegal sump pumps and roof down spouts. Priority should be given to removal of public and private inflow sources that are upstream from, and potentially contribute to, known areas of sewer system backups and/or overflows.

- Identification and prioritization of areas that will provide increased aquifer recharge as the result of reduction/elimination of infiltration and inflow to the system.

- An educational public outreach program for all aspects of I/I control, particularly private inflow.

Reporting Requirements:

A summary report of all actions taken to minimize I/I during the previous calendar year shall be submitted to EPA and the MA DEP **annually, by the anniversary date of the effective date of this permit**. The summary report shall, at a minimum, include:

- A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year.

- Expenditures for any infiltration/inflow related maintenance activities and corrective actions taken during the previous year.

- A map with areas identified for I/I-related investigation/action in the coming year.

- A calculation of the annual average I/I, the maximum month I/I for the reporting year.
- A report of any infiltration/inflow related corrective actions taken as a result of unauthorized discharges reported pursuant to 314 CMR 3.19(20) and reported pursuant to the Unauthorized Discharges section of this permit.

3. Alternate Power Source

In order to maintain compliance with the terms and conditions of this permit, the permittee shall continue to provide an alternative power source with which to sufficiently operate its

treatment works (as defined at 40 CFR §122.2).

D. SLUDGE CONDITIONS

1. The permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices and with the CWA Section 405(d) technical standards.

2. The permittee shall comply with the more stringent of either the state or federal (40 CFR Part 503), requirements.

3. The requirements and technical standards of 40 CFR Part 503 apply to facilities which perform one or more of the following use or disposal practices:

   a. Land application - the use of sewage sludge to condition or fertilize the soil

   b. Surface disposal - the placement of sewage sludge in a sludge-only landfill

   c. Sewage sludge incineration in a sludge-only incinerator

4. The 40 CFR Part 503 conditions do not apply to facilities which place sludge within a municipal solid waste landfill. These conditions also do not apply to facilities which do not dispose of sewage sludge during the life of the permit but rather treat the sludge (e.g., lagoons- reed beds), or are otherwise excluded under 40 CFR 503.6.

5. The permittee shall use and comply with the attached compliance guidance document to determine appropriate conditions. Appropriate conditions contain the following elements:

   - General requirements
   - Pollutant limitations
   - Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
   - Management practices
   - Record keeping
   - Monitoring
   - Reporting

   Depending upon the quality of material produced by a facility, all conditions may not apply to the facility.

6. The permittee shall monitor the pollutant concentrations, pathogen reduction and vector attraction reduction at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year:

less than 290	1/ year
290 to less than1500	1 /quarter
1500 to less than 15000	6 /year

15000 +	1 /month

7. The permittee shall sample the sewage sludge using the procedures detailed in 40 CFR 503.8.

8. The permittee shall **submit an annual report** containing the information specified in the guidance **by February 19.** Reports shall be submitted to the address contained in the reporting section of the permit (see page 11). Sludge monitoring is not required by the permittee when the permittee is not responsible for the ultimate sludge disposal. The permittee must be assured that any third party contractor is in compliance with appropriate regulatory requirements. In such case, the permittee is required only to **submit an annual report by February 19** containing the following information:

   - Name and address of contractor responsible for sludge disposal
   - Quantity of sludge in dry metric tons removed from the facility by the sludge contractor

E. COMPLIANCE SCHEDULE

In order to comply with the permit limits, the Permittee shall take the following actions with regard to Total Phosphorous:

1. By April 1, 2005, the Permittee is required to achieve the 0.2 mg/l total phosphorous limit.

F. SPECIAL CONDITIONS

1. Within three months of the effective date of the permit, the Permittee shall complete an evaluation of the structural integrity of the discharge pipe and verify that the wastewater is discharged directly to Spencer Brook, and only to Spencer Brook. If wastewater is being discharged to the adjacent wetland, within three additional months, the Permittee shall complete an evaluation of the impacts of the discharge on the wetlands and include options for remediation.

2. Dissolved Oxyen sampling of Spencer Brook shall be conducted at locations both upstream and downstream of the outfall from June 1st to October 31st. Downstream sampling shall be done once per week on the upstream side of the Lindsay Pond Road bridge. Within two months of permit issuance the permittee is required to identify, and submit to EPA and DEP for approval, the location of the upstream sampling point. The upstream sampling station shall be located at a point upstream of Lindsay Pond. For each of these locations, there shall be two samples taken per day, one in the early morning (before 8:00 AM) and the other in late afternoon (after 4:00 PM).

G. MONITORING AND REPORTING

1. Reporting

   Monitoring results obtained during each calendar month shall be summarized and reported on Discharge Monitoring Report Form(s) **postmarked no later than the 15th day of the**

following month.

Signed and dated originals of these, and all other reports required herein, shall be submitted to the Director and the State at the following addresses:

Environmental Protection Agency
Water Technical Unit (SEW)
P.O. Box 8127
Boston, Massachusetts 02114

The State Agency is:

Massachusetts Department of Environmental Protection
Bureau of Resource Protection
Northeast Regional Office
1 Winter Street
Boston, MA 01208

Signed and dated Discharge Monitoring Report Forms and toxicity test reports required by this permit shall also be submitted to the State at:

Massachusetts Department of Environmental Protection
Division of Watershed Management
Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608

H. STATE PERMIT CONDITIONS

This Discharge Permit is issued jointly by the U. S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (DEP) under Federal and State law, respectively. As such, all the terms and conditions of this permit are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the MA DEP pursuant to M.G.L. Chap. 21, §43.

Each Agency shall have the independent right to enforce the terms and conditions of this Permit. Any modification, suspension or revocation of this Permit shall be effective only with respect to the Agency taking such action, and shall not affect the validity or status of this Permit as issued by the other Agency, unless and until each Agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this Permit is declared, invalid, illegal or otherwise issued in violation of State law such permit shall remain in full force and effect under Federal law as an NPDES Permit issued by the U.S. Environmental Protection Agency. In the event this Permit is declared invalid, illegal or otherwise issued in violation of Federal law, this Permit shall remain in full force and effect under State law as a Permit issued by the Commonwealth of Massachusetts.